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USSR Report

TRANSPORTATION

No. 80

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USSR, FRANCE SIGN AVIATION AGREEMENT

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Mar 82 p 3

[Article by VOZDUSHNYY TRANSPORT Correspondent I. Grigor'yev: "Next Stage in Cooperation. An Important Step in Developing the Trans-Siberian Air Route. The IL-86 Begins Regular Flights to Paris. In the Spirit of Cooperation and Mutual Benefit."]

[Excerpts] At the Ministry of Civil Aviation [MCA] in Moscow, negotiations have been completed, whose results will undoubtedly give new impetus to Soviet-French relations in the area of air transport.

The Soviet delegation at the negotiations was headed by G. Mirzoyan, deputy chief of the MCA's Foreign Relations Administration. The French delegation was headed by Monsieur R. Esperou, director of air transport service in the French General Directorate of Civil Aviation.

During the three rounds of negotiations which took place in Moscow and Paris, an agreement was reached whereby the French airline, Air France, will be the first of the European airlines to begin operating the wide-body Boeing 707's on the trans-Siberian air route, beginning 1 July 1982.

As is well known, this is the shortest air route from Europe to Japan. Thus, the interest in the trans-Siberian route shown by western airlines is understandable. Implementation of this agreement will be advantageous both to the passengers, whose travel time will be reduced, as well as to Air France. A considerable savings of fuel is anticipated, which is a factor of no small importance, considering the energy and economic situation.

For its part, Aeroflot will begin operating wide-body IL-86's on Moscow-Paris and Leningrad-Paris flights, beginning this summer.

In addition, during the completed negotiations which took place in an atmosphere of mutual understanding, the two sides agreed upon many important issues of bilateral cooperation.

Thus, the results of the negotiations allow one to speak confidently about the new and important tasks planned for Soviet-French cooperation in the area of air transport.

Flights along the trans-Siberian route from Europe to Tokyo via Moscow are especially interesting to western airlines since, as we already noted, this is the shortest air route to Japan. Using this route will considerably reduce flight time and the flights will be entirely over land, along a well-equipped route. Operating along this air route, which is called the "Golden Route of the 20th Century", will open up great prospects for increasing the efficiency of international flights.

Undoubtedly, the Soviet-French documents, signed a few days ago in Moscow, are an important contribution to developing this route and using it for flights by wide-body airplanes.

As regards the Soviet wide-body IL-86, last December it was already successfully tested on the Moscow-Paris-Moscow route.

9887
CSO: 1829/163

REORGANIZATION OF AIRCRAFT SERVICING SAVES TIMES

Moscow VOZDUSHNYY TRANSPORT in Russian 9 Jan 82 p 2

[Article by D. Yakovlev: "They Took Extra Flying Time from the Downtime Figure"]

[Text] It is winter now. We have snow storms, fog, freezing weather, and ice. In general, it is the most difficult time to operate aircraft. There are many, many things to do in winter, but what about summer? The old saying, "Prepare sleds in the summer, and wagons in the winter" is just as wise as it is old.

One year ago an analysis of the traffic plan for the fleet of Il-62 aircraft showed that its fate depends less on the availability of aircraft than on the availability of technical personnel at aviation maintenance bases. According to calculation, during the summer period (from June to September) the existing traditional system of periodic technical maintenance by stages was able to process 122 planes when the requirement was 132. The shop was 20 days short of time, and considering replacing engines and taking care of labor-intensive problems it was necessary to find a reserve of 45-50 days.

The reserves were found in the seasonal variations in air travel. Engineers at the aviation maintenance base proposed 10 variations for solving the problem. Between December and May, following the approved variation, scheduled technical maintenance involving maximum labor-intensity (form 3) was done on 13 aircraft. The engine life (which is 23,400 hours for 13 aircraft) until the next form 3 was set from June until September. And during this time 75 scheduled maintenance jobs were done reducing total downtime by more than 50 aircraft-days. During the period of heaviest air travel 600 additional hours of flying time were made.

Another 400 hours of additional flying time were "issued" to passengers with the 35 aircraft-days conserved, which were "taken" from downtime by performing labor-intensive preventive servicing of the automatic aircraft control system ahead of schedule (before the onset of summer travel).

Thus, doing some of the flight work during the winter period solved the problem of the summer flying season both for the fleet of aircraft and for personnel. In 1982 the flying time of the fleet of Il-62's must be increased by 18 percent, including 22 percent at the peak of air travel in August. The problem has arisen again, like last year but in more critical form, both for the fleet of aircraft and for personnel. A. Bondar', chief of the aviation maintenance base, held two meetings of party and management activists of the production shops and functional divisions. The first meeting formulated the challenge. There is just one challenge: to fulfill the state plan. How? During the summer months there is no time for 35 scheduled maintenance jobs. The shop is short more than 70 days. The variation used in the last season saved only 52 days, which is plainly not enough. Considering the need for a time reserve it is far from enough. Calculations showed that increasing the number of form 3 maintenance jobs would cause excessive growth in the volume of shop work and aircraft downtime waiting for servicing, and that it would limit opportunities to fulfill the plan of air travel during the winter.

They made analyses, outlines, and calculations. The engineers thought hard, searching for ways to solve the problem. A. Lavrov, senior engineer in the production control division, I. Zamashkin, deputy shop chief, and V. Kochetkov, senior engineer, worked especially creatively.

The result of the second meeting was a new variation of the so-called combined system of mechanical maintenance by stages. By doing the most labor-intensive jobs (for example removing and servicing the flaps) during the winter and shifting some of the jobs from certain stage forms to others in the summer they can save 79 days. This will provide 900 hours of additional flying time. If we consider servicing of the automatic aircraft control system ahead of schedule, it is 1,300 hours. This is equivalent to 83 trips on the Moscow — Khabarovsk — Moscow run.

The new system is now being introduced vigorously, and there is no doubt that it will be implemented and the state plan of air travel will be fulfilled.

11,176
CSO: 1829/184

RSFSR'S ROAD SYSTEM DISCUSSED

Achievements Noted

Moscow SOVETSKAYA ROSSIYA in Russian 6 Feb 82 p 2

[Article by N. Slavutskaya: "New Roads"]

[Text] The network of hard-surface vehicle roads in the Russian Federation grows each year. Last year alone it increased by 9,670 kilometers, and more than 3,000 kilometers of them were built in the Nonchernozem region. Major segments of highways went into use on the routes from Saransk to Ul'yanovsk, Vologda to Arkhangel'sk, Rostov-na-Donu to Stavropol', Gor'kiy to Kazan', and elsewhere.

These facts and figures were cited at an expanded meeting of the board of directors of the RSFSR Ministry of Motor Vehicle Roads and the Presidium of the Central Committee of the Trade Union of Vehicle Transportation and Highway Workers.

In this five-year plan more than 50,000 kilometers of hard-surface vehicle roads will be built in Russia, which will generally complete construction of the basic grid of main highways in the European part of the RSFSR. Ninety-four rayon centers will be connected to the capitals of autonomous republics and kray and oblast centers; another 2,674 central building areas of kolkhozes and sovkhozes will receive reliable year-round communication with the rayon centers.

Improvement Planned

Moscow IZVESTIYA in Russian 23 Mar 82 p 1

[Article: "The Effectiveness of IZVESTIYA"]

> [Text] RSFSR Gosplan on the survey of letters entitled "Ruble on the Road." A program has been developed for the 11th Five-Year Plan that is expected to significantly accelerate development of the highway system of the Russian Federation and improve the quality of road work.

The republic State Planning Committee (Gosplan) was ordered by the RSFSR Council of Ministers to review the survey of letters published in No 6 and believes that the newspaper raised an important issue about improving the construction, repair, and maintenance of vehicle roads. In their letters contained in the survey, IZVESTIYA readers correctly note that road construction still lags behind the growing needs of the economy, above all the needs of the agroindustrial complex.

For this reason the RSFSR Council of Ministers adopted a decree on development of the highway system in the republic in the 11th Five-Year Plan and improving the quality of road work. During these five years at least 50,000 kilometers of national, republic, oblast, and local vehicle roads must be built. Plans envision improving the quality of road work, improving safety conditions for motor vehicle traffic, and further development of the production base of the road organizations. The 11th Five-Year Plan envisions general completion of the basic system of main highways with improved surfaces in the European part of the Russian Federation and accelerated development of roads in the Nonchernozem zone, the Central Chernozem region of the RSFSR, and Siberia and the Far East. Plans also contemplate construction of more than 30,000 kilometers of internal roads at kolkhozes and sovkhozes, 40 percent more than in the last five-year plan. The RSFSR Ministry of Motor Vehicle Roads must basically solve the problem of replacing wooden bridges that do not permit modern vehicles to cross on main highways with permanent manmade structures.

There must be maximum initiative in the local areas, use of resources from local sources, and mobilization of internal reserves to carry out this major road construction program, for road construction is truly a national cause. At the same time, there are a number of pressing problems that must be resolved.

At the present time road-construction machines with large unit capacities account for only 3-8 percent of the total volume of machinery allocated by USSR Gosplan. This makes it impossible to supply road organizations with heavy-duty machinery, step up the pace of road building, and raise labor productivity significantly. The Ministry of Construction, Road, and Municipal Machine Building continues to produce small, obsolete road machines.

The important problem of supplying asphalt for major and medium road repair in amounts corresponding to road repair schedules is not being adequately solved. For many years USSR Gosplan has covered only 25 percent of the asphalt requirement for road repair.

The Ministry of Transport Construction, which is expected to build national highways and has a well-developed production base, performs only 13-14 percent of the RSFSR plan of work for construction of general roads and bridges each year. The construction of numerous important facilities by contracting organizations of this ministry is going unjustifiably slowly.

In many cases USSR Gossnab contemplates allocating material-technical resources for road work in the second half of the year. Quite often large numbers of truck graders, bulldozers, and excavators are not delivered to road organizations because of failure to fulfill plans for the production of construction machinery.

The USSR Ministry of Construction Materials Industry, the Ministry of Construction, Road, and Municipal Machine Building, the Ministry of Chemical Industry, and the Ministry of Instrument Making, Automation Equipment, and Control Systems must insure that the contemporary materials, machinery, and monitoring-measuring equipment needed for road organizations is produced. USSR Gosstroy must step up the development of normative documents for the design and construction of internal roads at sovkhozes and kolkhozes so that they meet current requirements for the use of such roads.

11,176
CSO: 1829/174

PLANS FOR NATURAL GAS-POWERED VEHICLES IN UKRAINE PROGRESSING SLOWLY

Kiev RABOCHAYA GAZETA in Russian 6 Feb 82 p 2

[Article by G. Kirkevich, candidate of economic sciences, Kiev: "At Low Rpm's"]

> [Text] Natural gas is a fine substitute for gasoline. But what is preventing widespread use of it in motor vehicle transportation?

A great deal is being said and written today about using natural gas as a vehicle fuel instead of gasoline. It is truly a pressing issue. Motor vehicle transportation is taking on more and more work, while extraction of petroleum becomes increasingly expensive and the number of users is growing rapidly. At the same time, we have much greater reserves of gas, and it is less expensive. The power of an engine that uses natural gas is one-third greater than a conventional gasoline engine and running time between overhauls is one-half greater. In short, natural gas is advantageous in every way.

Strange as it may seem, however, there has been practically no development toward natural gas at all. One of the reasons is that for a long time specialists were not able to agree on what to use instead of gasoline: methanol, liquefied gas, or natural gas. This happened even though the best solution lay, as they say, right on the surface. Natural gas is certainly the ideal fuel for motor vehicles, in terms of prime cost and operating properties. Consider, when 100,000 motor vehicles use natural gas it will save 1.5 million tons of gasoline, which is equivalent to the capacities of a large petroleum refinery. Moreover, servicing such a number of vehicles requires an additional six petroleum depots and 200 filling stations costing more than 200 million rubles, instead of 100 gas refill stations whose construction would require one-sixth as much money.

There is another argument in favor of natural gas. Our country's resources of liquefied gas, a by-product of petroleum refining, are not large enough to meet the needs of the chemical industry, the rural population, and motor vehicle operators. Methanol is too expensive, and in addition it is toxic and very aggressive to metal. And what sense does it make to produce methanol from natural gas, which is the ideal motor fuel?

The excellent properties of natural gas as a fuel have been confirmed by many years of experience. During the 1950's and 1960's about 40,000 natural gas-powered vehicles were operated on the roads of our country, and our republic had the largest number: more than 25,000. They were served by 22 gas refill stations and two liquefied gas stations. The delivery cost of one cubic meter of gas then was just over three kopecks, half the price of a liter of gasoline. Industry mastered the production of natural gas-powered vehicles, and it was easy to modify older vehicles. At repair plants of the Ukrainian SSR Ministry of Motor Vehicle Transportation this operation cost just 350 rubles with minor labor expenditures. But the benefit was very substantial: a full tank enabled the natural gas-powered GAZ-51 to carry a load 350 kilometers, and the ZIL-156 to travel 450 kilometers loaded.

The gas refill stations were fairly large for those days, giving up to 550 vehicles a day refills. And their locations were very convenient; they were able to serve not just urban transportation, but all intercity transportation. Construction of one station cost 250,000-300,000 rubles. Then, for a number of reasons, the production of natural gas-powered vehicles was stopped in the mid-1960's and, unfortunately, the stations were dismantled. Only two thrifty managers maintained their stations, in L'vov and Berdichev. They continue to be in full operation today, refilling almost 300 vehicles apiece.

We are not talking about this out of historical interest, and not even to persuade the advocates of liquefied gas or methanol. One year ago the decision was made to use liquefied natural gas as fuel for motor vehicle transportation. This year the enterprises of the Ministry of Automotive Industry have already produced an experimental batch of natural gas-powered vehicles which are undergoing testing in L'vov. Plans call for construction of gas refill stations in many cities. The all-Union Soyuzgazprom [USSR Gas Industry] Production Association has been formed and commissioned to carry out the full program of work.

But just at this apparently promising point fundamental problems have begun and certain agencies are making decisions that are not entirely sound. Let us take just one example. The USSR Ministry of Gas Industry was supposed to prepare the detailed design for construction of gas refill stations in the first half of 1981. But it is still not done today. As a result, the plants which are to supply equipment for the stations have not been identified, construction sites have not been selected, and contracts for their construction have not been signed. It was not until November of last year that the Ministry of Gas Industry ratified an assignment to design gas refill stations of the same size as we had 30 years ago and sent the assignment to its subordinate institutes. Isn't that amazing? And there is no way to understand why the planned cost of the stations is five times as high as it was in the 1950's. In our opinion these are blatant miscalculations.

And moreover, is it necessary to draw new station designs? The old ones, developed by the Ukrgiprogaz [Ukrainian SSR State Planning Institute for Construction in the Gas Industry] Institute (which is today VNIPItrangaz [possibly All-Union Scientific Research and Planning Institute of Gas Transportation]) are entirely suitable and only need minor changes. Using them would enable us to cut expenditures and move up construction times.

When the subject of the modest traffic capacities of the new stations comes up, specialists reply that we do not have heavy-duty compressors that could supply fuel to a thousand or more vehicles. They say that in two years enterprises of the USSR Ministry of Chemical and Petroleum Machine Building will develop a new type of compressor and things will be done differently, but in the meantime we must be content with small ones. This is a mistake. Compressors of the necessary capacity exist today; they are produced by the Gor'kiy Dvigatel' Revolyutsii Plant, and they are used to pump natural gas into underground reservoirs. In other words, they are working in the same "specialization" as we find at gas refill stations. Then why should we develop from the beginning and incorporate production of something that already exists?

We will admit that the design developed four decades ago for the gas canisters for motor vehicles has long needed modifications. The canisters are too heavy, so that the additional engine power resulting from the use of gas is not used for productive work, but rather to carry the canisters. It is true that the Institute of Mechanics of the Ukrainian SSR Academy of Sciences recently made a lightened canister out of fiberglass, but it is still very expensive. We think that the scientists at the Dnepropetrovsk Scientific Research Institute of Pipe Industry and the Institute of Electrical Welding imeni Ye. O. Paton will be able to help out very soon.

As we see, the efforts of scientists working on the problems of natural gas-powered transportation are not unified today. We do not have a single science center which coordinates and summarizes all work in this area. Therefore, it would be good to assign the work of studying and deciding these questions to a specialized institute.

An equally important problem is accelerated construction and rational siting of gas refill stations in our republic. The point is that by the end of the current five-year plan the Ukraine will have 28,000 natural gas-powered vehicles. But in the next two years plans call for building only seven small stations in our republic. The question of further construction has not been decided. With such an approach it is not impossible that the natural gas-powered vehicles we receive will find themselves on starvation rations and be forced to go back to expensive gasoline.

Furthermore, the locations of stations being planned have not been carefully thought out. The first seven stations will be built in Khar'kov, Donetsk, and L'vov. The distances between them are too great for the stations to be able to serve intercity transportation. The old arrangement was more efficient, so why shouldn't it be used today?

In our opinion, it is a mistake to exclude Kiev from the list of cities where natural gas-powered vehicles should work at first. For one, Kiev is located at the junction of numerous major highways. This means that stations built here would be able to serve vehicles on long trips. They would be an essential connecting link between the western and eastern regions of the republic. It is also very important that Kiev today has a very high gasoline pollution index and the construction of natural gas refill stations would help greatly to clean up the air basin.

As we can see, the path to widespread use of natural gas-powered transportation still faces numerous peculiar obstacles resulting from careless thinking, a superficial knowledge of the work, and elementary mistakes. There is just one consolation, the fact that the obstacles are new ones, which means that they can easily be removed.

11,176
CSO: 1829/181A

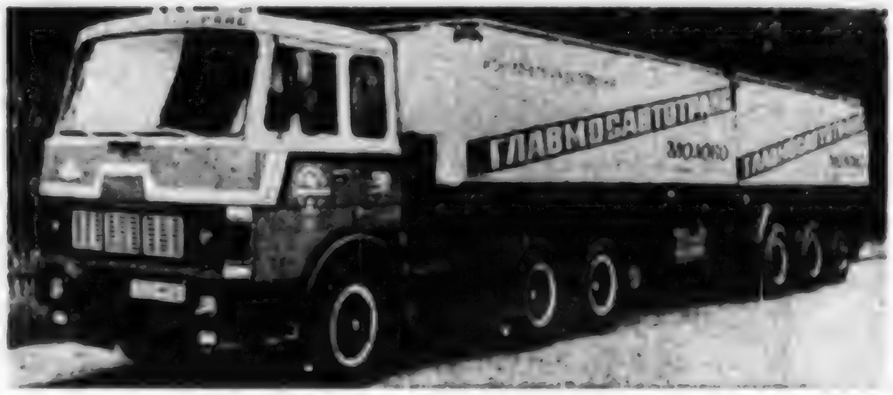
MOTOR VEHICLE

MOSCOW VEHICLE COMBINE USING LARGE NEW MILK TRUCK

Moscow NEDELYA in Russian No 51, Dec 81 p 14

[Article by V. Starchevskiy: "Powerful New Milk Truck"]

[Text] Everything about this rig is new. The MAZ-6422 tractor is new, one of the latest models from the Minsk Automotive Plant. So are the snow-white rectangular tanks behind the cab. And finally, the load capacity on each trip is new: 23 tons of milk. There is no other tractor-trailer rig like this in our country or abroad.



This powerful vehicle comes from vehicle combine No 6 of the Moscow Administration of Vehicle Roads of the Main Moscow Administration of Motor Vehicle Transportation. Its merits are not limited to its outstanding physical data. Its tanks are removable, so when there are circulating containers truck downtime for unloading will be significantly reduced and, moreover, when necessary it is possible to mount 20-ton containers carrying any kind of load on the platforms in place of the milk tanks. In short, if everything is considered, the economic impact will be tens of thousands of rubles a year. Vehicle combine No 6 is preparing to build five such trucks.

Possibly some will ask whether such a hefty rig will be comfortable on the city streets, and whether it is really necessary for hauling within the city? But its main routes are intercity routes. It carries its load to Moscow from distant places, and on each trip does the job of several conventional milk trucks.

11,176
CSO: 1829/174

RAILROAD

CURRENT STATE OF RAILROAD CAR PARK EXAMINED

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 9, Sep 81 (signed to press 8 Sep 81) pp 12-17

[Article by G. I. Osadchuk, deputy chief and chief engineer of the Main Administration of Railroad Car Management, MPS [Ministry of Railways]: "The Railroad Car Operation in the 11th Five-Year Plan"]

[Text] In the accomplishment of the large-scale tasks set for the railroad transport workers by the 26th CPSU Congress an important role is assigned to the railroad car operation. The efficient and well-organized work of all its subdivisions, and particularly the car depots, the servicing points and the points for the preparation of cars for shipments, will in many respects be the determining factor in the uninterrupted operation and safety of movement of the trains, the punctual supplying of technically serviceable rolling stock for shipments, and the effectiveness of the use of the transport facilities. With this in view, the 11th Five-Year Plan called for a comprehensive program of further development of the railroad car operation dependability and improved structure of the railroad car fleet, strengthening of the car repair base, increased effectiveness of the use of the existing production capacities, and improvement of the entire system of technical servicing of cars. The successful implementation of this program will be enhanced by further advance of the work of railroad transport.

Improvement of the Railroad Car Fleet

In the period of the 10th Five-Year Plan the transport workers and experts, in collaboration with the railroad car-building industry, carried out a number of important measures for stepping up the technical level, sturdiness, reliability and durability of the freight and passenger cars. Of particular importance was the beginning of extensive use of 09G2D and 09G2SD copper steel, which made possible a 20-30 percent increase in the corrosion resistance of the basic units and parts. There was considerably expanded use of 10KhNDP steel, which is 10-15 percent sturdier than 09G2D steel and has 2-4 times the corrosion resistance. Also put into operation was series production of cast parts for freight car trolleys (a side frame and spring beam) and automatic coupling devices made of low-alloy manganese and manganovanadium steel, which make for a 1.5-2-fold increase of the dependability of these products. Also considerably strengthened were the elements of the bodies of the cars and the wheel pairs. Improved braking devices were introduced, we began the use of more durable varnish and paint materials, etc.

The stepping up of the technical level of the rolling stock enabled us in the 1976-1980 period to increase the axle loads of the freight cars built after 1974 from 21-21.5 to 22 tons and then to 23.25 tons. Accordingly the freight capacity also was increased by 6-7 tons. The structural strengthening enabled the Ministry of Railways to lengthen the period of operation before coming in for capital repair from 10 to 12-14 years for covered cars and from 7 to 10 years for cars for the hauling of grain and cement. In the future we expect to also increase these periods for the other types of cars as well.

In the 10th Five-Year Plan a great deal of attention was focused on the development and introduction of new, improved rolling stock. Thus, in recent years there was put in operation series production of covered freight cars of all-metal construction with enlarged door openings which provide better conditions for mechanization of the loading and unloading operations. We converted to production of four axle all-metal open cars which were the basis for the development of a new, improved model of an open car with sturdier and more dependable basic units. We also put in operation series production of a specialized flatcar for the loading of large-freight containers and an eight-axle tank car with a carrying capacity of 120 tons for the hauling of gasoline and clear petroleum products.

Important work has been done in respect to the development of effective rolling stock for the shipment of grain, granulated sugar, various chemical and mineral fertilizers, cement, sinter, peat and other bulk freight. Until recently the transport of the bulkiest of these products was carried out chiefly in covered, all-purpose cars. Such transport was attended by considerable layover of cars for freight operations because it was practically impossible to fully mechanize the performance of the loading and unloading work with the use of continuous transport facilities. The level of mechanization in the loading and particularly the unloading of bulk freight, did not exceed 15-20 percent. Heavy losses of freight occurred and this necessitated large expenditures for repacking, etc.

Broad technical and economic research has shown that to eliminate these deficiencies and improve the transport of bulk freight it is desirable to use self-discharging hopper cars. This advantage is also furthered by the fact that the greater part of this freight possesses the necessary gravitational characteristics. On the basis of the research we developed and subjected to thorough strength and operational tests the models of a series of self-discharging hopper cars for the shipment of grain, mineral fertilizers, cement, mining products, peat, coke, etc. The distinctive feature of these cars is the body of the bunker type with vertical sides and slanting front walls.

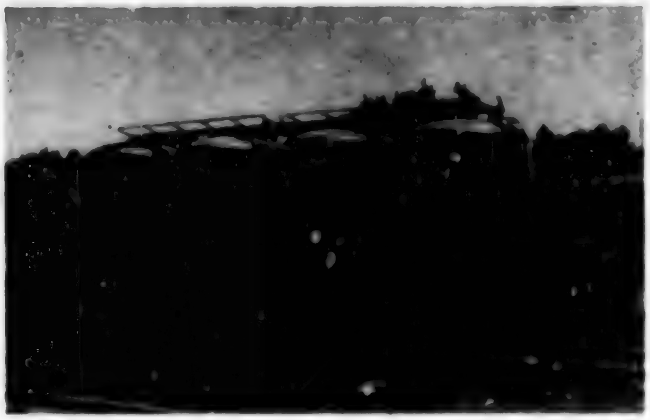
The introduction of specialized hopper cars enabled us to develop fully mechanized warehouses, to increase 3-4-fold the labor productivity in loading and unloading operations, and to reduce the costs for loading, unloading and transport of bulk freight to 1.5-2 times their former level. In addition, the putting into operation of the self-discharging hopper cars has freed a considerable number of workers engaged in manual labor in loading and unloading. The yearly economic effect of the introduction of these cars is in excess of 350 million rubles.

In recent years a great deal has been done in respect to improvement of the passenger rolling stock. Thus, we put into series production passenger cars with combined electric and coal heating, which provide a stepped-up level of comfort for the passengers and improve the conditions of labor of the maintenance personnel. We introduced a system for automatic regulation of the air temperature in the car, enabling us to save 15,000 kilowatt-hours of electric energy per car during the heating season. We put into production mail and baggage cars with a stepped-up level of comfort for the service personnel and with combined electric and coal heating.

The passenger car inventory is now made up entirely of all-metal cars with a body length of 23.6 meters; 86 percent of the cars are earmarked for the transportation of passengers and 14 percent consist of cars for auxiliary purposes (dining cars, baggage cars, mail cars, official cars, etc.). The technical level of the passenger cars delivered is characterized by the use of KV3-TsNII trolleys with a design speed of 160 km per hour, combined water, electric and coal heating, polystyrene heat insulation, forced air ventilation by air duct, and a system of autonomous electric supply operated from the axle and a storage battery with a capacity of 300-500 ampere-hours. Some of the cars are equipped with air conditioning units. For movement on some of the lines of the network with a speed of 200 km per hour we have an experimental batch of cars which possess the appropriate technical characteristics.

In the 11th Five-Year Plan we expect to deliver to the railroads 390,000 freight cars, 11,500 passenger cars and 950,000 containers. We will increase the production of eight-axle open cars and tank cars as well as specialized cars of the hopper type for the shipment of grain and mineral fertilizers, platforms for the shipment of large freight containers, thermal tank cars, oil and bitumen cars, etc. In the 1981-1985 period we also intend to develop and put into production 17 new types of freight cars, including general-purpose lengthened platforms with increased carrying capacity, a covered general-purpose, all-metal car with body volume increased to 140-150 cubic meters for the shipment of packaged piece goods and some bulk freight, an eight-axle open car with blank front walls, and platforms for large freight containers with a shock absorbing device of improved design. Also specified is the production of conveyers of various types with carrying capacity of 120, 240, 300 and 340 tons, refrigerator cars of the Sendvich type, employing in their structure aluminum alloys, low-alloy steel, and polyethylene foam, specialized cars for the transport of coal, flour, metallized mining products, etc.

On the basis of the need to increase the traffic and carrying capacity of the railroads the 11th Five-Year Plan provides for conversions to the building of some of the cars with transporter gage, increase of the carrying capacity of the cars to provide for the possibility of axle loads up to 25 tons, provision for further increase of the sturdiness and reliability of the cars, increase of the speed of movement of the freight trains up to 100 km per hour, and increase of the weight of the trains. In this connection it is contemplated that in the next few years work will be completed for replacing the boom and other antiquated trolleys with TsNII-Kh3 trolleys.



Specialized Car for the Transport of Flour

One of the radical measures for increasing the traffic and carrying capacity of the railroads, lengthening the sectors of nonstop run of trains to 500-600 kilometers, and increasing the labor productivity in railroad transport is the conversion of freight cars to roller bearings. At present approximately 53 percent of the freight car fleet in operation is equipped with them. Converting all the cars to roller bearings will enable us to save 3.3 billion kilowatt-hours of electric energy, 1.5 million tons of diesel fuel, 20,000 tons of nonferrous metal (babbitt), more than 400,000 tons of axle oil and 4,300 tons of padding material. For the national economy as a whole the yearly saving will be not less than 480 million rubles. In light of this the plan calls for the conversion of 200-250,000 freight cars to roller bearings in the 1981-1985 period.

To increase the dependability of the skid units we plan final conversion to the manufacture of bearings from steel with a controlled ShKh4 hardening capacity, to front reinforcement of the bearings with washers instead of nuts, to the use of more effective lubricants for the skid units and hollow axles which reduce the nonspring bulk of the car, to wheels with more resilient characteristics, etc. For the purpose of increasing the axle loads of the freight cars and the speeds of movement of the passenger cars we expect in the future to carry out specialization of the wheel pairs for passenger and freight cars.

In the 11th Five-Year Plan we will fully implement the conversion of the freight cars to composition shoes with wire mesh housing and composition material of increased heat conductivity. The freight cars, both the new ones and those in operation, will be equipped with improved air distributors with mainline part No 483.000.

Four-Axle Open Car with All-Metal Front Wall

Tank Car with Transfer Platform for Transport of Light Petroleum Products

The automatic coupling devices of increased strength will be equipped with absorbent apparatuses with an energy capacity of 6-7000 kilogrammeters. Simultaneously with this we will work on the development of apparatuses with an energy capacity up to 16-18,000 kilogrammeters.

Further development will be accorded the container inventory, particularly the cars for the delivery of large freight containers, both of the general-purpose type and those earmarked for the shipment of various types of freight.

The complex of work projects for improvement of the passenger cars provides in the current five-year plan for the development and starting of series production of more comfortable cars with a body length of 26 meters. We plan to build upholstered cars of the new types, dining cars of improved design, buffet compartments with self-service, and cars for high-speed travel. All of the passenger cars will be delivered on trolleys which have better operational characteristics than the existing ones. In the finishing work extensive use is being made of new decorative materials which have an attractive exterior appearance and increased fireproof qualities. Special importance is being attached to increasing the dependability of the cars by improving the corrosion resistance and thermotechnical qualities of the bodies along with the use of more durable materials.

The equipment of the cars will be more adaptable to diagnosis and repair. Widespread electrification of the railroads will help to expedite the change to a centralized electrical supply for the passenger cars and the conversion of them to electric heating. To implement this industry must furnish locomotives with the appropriate devices. It is planned to fully convert the locomotive fleet to progressive heating systems within the next 10 years.

In the 1981-1985 period we must resolve a number of problems which have great importance for improvement of the technical and economic characteristics of the cars. We have now largely exhausted the possibilities for further reduction of the weight of the trains and increase of their operational reliability by design changes and more rational distribution of the metal in the structural components. It is therefore becoming very urgent to make extensive use in car building of more durable steel products and light alloys. One of the reserves for further reduction of the natural weight of the cars and the saving of rolled metal is replacement of ferrous metals with aluminum alloys. However, the work in this field is proceeding at a slow pace. Also being put in operation with insufficient speed are effective cold curved periodic sections. For example, we have barely begun the production of economic periodic sections with variable thickness in relation to length even though widespread use of these in the building of cars may produce a sizable effect.

The development of a network of railroads in the regions with a cold climate requires the development of rolling stock which can operate safely in low (down to -60 degrees Centigrade) air temperatures. Consequently, it is necessary in the 11th Five-Year Plan to also actively pursue research in this direction.

Increasing the weight of the freight trains is a measure stemming from the need to increase the linear loads of the cars by further improvement of the structure of the car fleet, primarily by the introduction of eight-axle open cars and tank cars.

The operation of such cars on the route trains would enable us to increase their weight by approximately 37 percent, which is a sizable reserve for increasing the carrying capacity of the lines and for successful handling of the growing volume of transport, especially on the railroads of Siberia, the Far East, Kazakhstan and the Ural region. However, we are making extremely slow progress in resolving the problem of introducing large-freight eight-axle cars. The railroad people have failed to receive tens of thousands of these cars. Because of industry's nonfulfillment of the planned assignments for the supplying of eight-axle cars to transport, the proportion of them in the inventory currently barely exceeds one percent. As we have already noted, the production of eight-axle cars must be increased in this five-year plan and consequently the car building industry must in the shortest possible time take appropriate measures to see to it that the prescribed assignments are carried out in full. It is expected that in the second half of the five-year plan some of the closed lines will begin to operate circumferential runs made up of eight-axle specialized open cars and tank cars with linear loads in gross loaded state of 9-10 ton/running meters. Also, the weight norms of such trains will be brought up to 9-10,000 tons. The general-purpose open cars in the eight-axle design and transport dimensions will in actuality not begin to arrive at the railroads and be put in operation until after 1985.

The car-building industry must also provide for the delivery of all the new cars operating on roller bearings. They have still not succeeded in accomplishing this despite the fact that a number of special decisions have been made in this regard.

It should be noted that there are still important deficiencies in the development of the new types of cars. First of all are the prolonged time periods required for developing them and putting them into series production. We have also seen cases where series production of the new cars is begun without adequate preliminary tests. The main reason for this situation is the lack of an up-to-date experimental base in most of the car-building plants. This deficiency, we believe, must also be eliminated as quickly as possible.

The program mapped out for the 11th Five-Year Plan and designed for improvement of the railroad car inventory will promote enhancement of its structure, increase of the reliability and effectiveness of its work in operation and further the increase of the productivity of the cars, which by 1985 should achieve a 15 percent growth.

Increasing the Effectiveness of the Repair Base

Stepping up the intensiveness of the use of the cars, increasing their freight capacity and the quantitative growth of the car fleet--these objectives make special demands on the car repair base. In recent years the car operation has been the object of the implementation of important measures for the development and improvement of this operation.

In the railroad car operation we are continuing to pursue the progressive direction for specialization of the railroad car depots. In the work of car repair we are introducing full mechanization and automation of the production processes and effective technology. In the context of concentration of production and a stepped up level of mechanization the obsolete stationary system of repair has given way to the new progressive flow-line method. At present more than 70 car depots are repairing open cars, covered cars, platforms and container cars on flow lines. All this has enabled us to step up the productivity of labor and to yearly increase the output of cars from the planned types of repair.

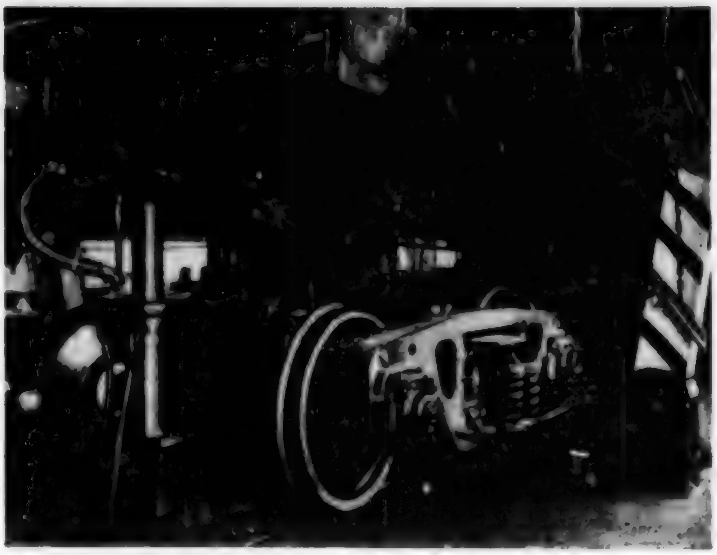
For a long time a "bottleneck" in the car operation was the organization of the preparation of cars for shipment. Recently the innovators of the network railroad car operation and the workers of the planning and design offices of the railroad car main administration (PKB TsV) developed a complex of machines and mechanisms which facilitate the preparation of cars on an industrial basis. A number of high-powered modern points have been built for the preparation of cars for shipments; they have a high level of mechanization and their productivity has reached 500-1500 cars a day.

Important work is being done to strengthen the base for technical servicing and current repair of the cars at the sorting and large sector stations. The points for technical servicing of the cars are introducing on an ever increasing scale self-propelled repair units and other effective devices and attachments which provide for accelerated and qualitative preparation of the trains en route. A great deal has also been done to improve the monitoring of the technical condition of the cars during their runs.

At the same time, the railroad car organization's technical base for the repair and servicing of cars is still failing to fully satisfy the requirements imposed by the modern conditions of operation of the rolling stock. Thus, the rates of growth of the volumes of repair are continuing to lag behind the rates of growth of the car fleet and behind the requirements for depot repairs, especially on the roads of the Urals, Kazakhstan, Siberia and the Far East; this makes imperative further escalation of the capacity of the car depots. There has been considerable lagging in development of the base for technical servicing of passenger cars at the Moscow, Leningrad, Novosibirsk, Krasnoyarsk, Novorossiysk, Minsk and a number of other centers. In the Donbas, Kuzbas, Northern Kazakhstan and Bashkiryia we are witnessing serious difficulties in the preparation of cars for shipments of coal, petroleum products, ores and metallurgical freight.

The lack in the railroad car organization of a centralized base for the manufacture of technological facilities is seriously deterring the work of mechanization of the labor-intensive processes of technical servicing and preparation of cars for shipments. It is also retarding the widespread introduction of the flow-line method of repair of cars and the task of supplying modern equipment for the installations being renovated and those being built.

For a fuller satisfaction of the needs for repair and for improvement of the technical condition of the car fleet the 11th Five-Year Plan provides for a fundamental renovation of 34 of the existing car depots and construction of 10 new ones. When the depots are renovated the programs for turning out cars will be brought to 6-8,000 cars a year and with the new construction to 6-12,000 cars a year. Top priority is being given to the plans for construction of a number of depots on the roads with large-scale loading of fuel, metallurgical products and grain. Construction has begun on depots for freight car repair at Sokovoye on the Southern Railroad, Sukhovskaya on the East Siberian Railroad, Chu on the Alma-Ata Railroad, Tselinograd on the Tselinna Railroad, and others. We expect in the future to build car depots on the Krasnoyarsk, Kemerovskaya, Far Eastern, South Ural, Sverdlovsk and several other railroads. All the depots being renovated and built will be outfitted with modern technological equipment for the flow-line repair of cars.



Jacks for Lifting of Cars

The basic direction of the development of a base for the preparation of cars for shipments is the construction of large-capacity points near the areas of large-scale loading and the development of large points for the complete preparation of cars for shipments as well as gradual elimination of the points with little activity. In the 1981-1985 period we plan to build 28 preparation points, to renovate five, and to strengthen 54 of them by means of amortization deductions. This will enable us to increase the capacity of these points by 15,000 cars a day. There are at present difficulties being encountered in the preparation of tank cars on the Sverdlovsk, Krasnoyarsk, Tselinna, Central Asian and a number of other railroads. In light of this the current five-year plan calls for the renovating of one and the construction of six washing and steaming stations. This will provide for the additional preparation of 3,000 tank cars coming in daily.

The requirements of the railroad car operation in its modern stage are not being met by the existing base for the repair of container cars, particularly the large container freight cars. Because of this, we will renovate two and build nine depots for the repair of these cars. First priority construction is planned on the railroads of Siberia and the Far East.

The railroads' base for the repair of refrigerator rolling stock is also failing to fully satisfy the requirements for repair of refrigerator trains and sections. Consequently, it is planned during the years of the 11th Five-Year Plan to renovate four depots and build seven new ones and to assign to them 2,500-3,000 cars each. In addition, we expect to renovate five and build 10 equipment points, 16 enlarged technical service points, and four bases for stowing refrigerator rolling stock.

To fully provide for the need for planned repair of passenger cars we intend in the 1981-1985 period to renovate four depots and bring their capacity to 1,000 cars a year; also, to build a depot with a capacity up to 2,000 cars a year. In light of the increase in the flow of passenger cars, we also plan to renovate 14 technical stations and turn-around points and to build 18 new ones. To maintain passenger cars in stowage we will build 10 bases,each with a capacity up to 600 cars and outfitted with modern technological equipment. A great deal of attention will be devoted to stepping up the capacities of the laundering shops. At present in the period of mass shipments their productivity does not exceed 800 tons a day against a need for 1,000 tons. Because of this, we plan to build five new laundry facilities with a capacity up to 50 tons of wash a day and to renovate 14 with replacement of their technological equipment.

As a result of the planned completion (in the main) of the conversion of the car fleet to roller bearings the need for repair of wheel pairs will triple by 1985. It is therefore planned to renovate three and build six car wheel shops and to bring their capacities to 15-20,000 wheel pairs a year. There will also be further development of the roller shops of the car depots.

To outfit the enterprises being renovated and built with optional technological equipment we will expand the production base of the PKB TsV in Khar'kov, Riga, Kiev and Georgiu-Dezh. In the task of providing the enterprises with the necessary technological equipment an important role must also be played by the railroad laboratories attached to the car operation services. However, in essence this problem can only be solved on the basis of the organization of large-scale specialized production, as for example an experimental plant.

Replenishment of the inventory with new rolling stock containing all-metal bodies and fulfillment of the work for the modernization of cars and expansion of the list of car components to be reconditioned by welding has led to a 19 percent increase in the volume of welding and fusing work in the 10th Five-Year Plan. This required a new approach to the problem of improvement of the welding production and an orientation for extensive use of the progressive methods of welding. The total inventory of welding equipment in the railroad car establishment grew 1.3-fold and the structure of the electric welding equipment changed in the direction of an increased proportion of equipment for the mechanized types of welding and fusing. The level of mechanization of fusing work reached 40 percent and for welding work

12 percent. The greatest degree of success in resolving the problem of mechanization of the welding work was achieved on the Southwestern, Oktyabr', Odessa, L'vo Kuybyshev and Southern railroads.

The low level of mechanization of the welding work is due to the slow pace maintained by the repair enterprises in introducing semiautomatic welding of load-bearing elements of open car bodies in a carbon dioxide gas medium. The low level is also due to the inadequate extent to which the depots are supplied with standard welding tables, manipulators, vertical rotary machines, tilters and other installations. An ever greater proportion of the areas used for welding and fusing work (approximately 80 percent) are open areas in which it is difficult to set up the conditions for highly productive labor. And we have not properly resolved the problems of improvement of the quality of the repair of cars by welding; as a result, nearly half of the uncoupling cases are due to disrepair of the car bodies, primarily cases of destruction of the weld seams.

For purposes of a further improvement of the welding production and a stepping up of the level of mechanization of the welding operations, every railroad has now assigned base depots where first priority is given to the introduction of all the progressive methods of welding and fusing and where courses and seminars are conducted to exchange information on advanced experience. To help the railroads the PKB TsV have developed mechanized installations for fusion of small beams for TsMV [all-metal passenger car] trolleys, buffer rods, suspension brake shoes, automatic coupling tail crosspieces, and other parts. We have collected the reference and information material and the technological and design documentation.

The five-year plan set the task of bringing all the car welding enterprises up to the level of the base car depots, attaining a high level of mechanization of the welding work, particularly in repair of the car bodies, and providing normal and safe conditions of labor for the welders. This will enable us to significantly improve the quality of the repair of cars, and to substantially reduce the number of cases of uncoupling of cars from the trains because of defects in the weld seams. Improvement of the welding production is also of great importance for industrial organization of separation of the freight cars removed from the inventory. The point is the establishment of mechanized sectors for the separation of cars presupposes the use of effective methods of gas-flame, air-plasmic, and air-electric arc cutting.

We will also continue working on increasing the effectiveness of the fusing operations on the basis of extensive introduction of semiautomatic fusing under a flux layer with the use of metal sandstone, laminated electrodes, and powder wire as well as various manipulators, tilters and other attachments designed for the mechanization of fusing work.

Further improvement of the system for repair of rolling stock is closely bound up with the task of establishing for the car repair work a comprehensive system of repair quality control (KSUKR), automated control systems, and technical diagnostic facilities. Improvement is also bound up with improvement of the metrological work of the enterprises. There have already been definite achievements in these fields. Thus, in the 10th Five-Year Plan in the context of the ASU [automatic control system] coordination plan the railroad car specialists prepared 44 tasks which are necessary for analysis of the production and operational processes; of these six have already been put into operation experimentally. Prescribed for the 1981-1985 period is the introduction of tasks at a higher level, including centralized accounting for the operational fleet, the collection and processing of operations data concerning the work of the railroad car organization within the framework of the development of the Diskor system, and the tasks on the management level of the railroad and the enterprises.

Nearly 200 of the car repair enterprises have now introduced the system of quality control for repair of cars. In the development and introduction of this system primary attention is focused on the establishment of production conditions which would eliminate the possibility of the occurrence of defective output. The use of this system yields positive results, makes for an improvement in the work of the depot subdivisions, steps up the quality of the repair and technical servicing of the cars, and reduces their layover time in depot and current repair. The figures show that the introduction of the system in all the car depots enables us to reduce the operational expenditures by more than a million rubles and to free additionally for loading about 2,000 cars daily. In the current five-year plan we plan to introduce KSUKR in approximately 50 more car depots.

Experimental Self-Propelled Chelyabinsk
Machine for Inspection of Cars on Trains

An integral part of the comprehensive system of quality control is the metrological provision for production. The railroad car industry uses about one million diverse measurement devices, including some narrowly specialized for the industry. Also in use is a considerable quantity of various testing facilities. The correct use of these and prompt checking and servicing are matters of very great importance. However, the metrological work in the railroad car operation has still not been established on the proper level. Consequently, it is necessary to do a great deal in the next few years to improve this work and first of all to develop technological processes equipped with the requisite means of measurement and testing and common methods for the carrying out of measurements. It is also necessary to select the appropriate measuring facilities for all the railroad car enterprises and to establish a clear-cut procedure for checking and repair of the measurement and testing facilities.

In the immediate future the railroad car workers must considerably intensify the work for the introduction of the diagnostic means available in transport and the other sectors of the national economy. They must also develop new diagnostic means to discover malfunctions in the most important units of the cars without dismantling them and to predict how much potential they have left for operation. At present there is serious lagging to be observed in this important work.

In the period of the 11th Five-Year Plan the labor productivity must be increased by 9.8 percent. In the successful accomplishment of this task a decisive role is assigned to the acceleration of scientific-technical progress. With this in view we are calling for the development of accelerated introduction in the railroad car operation of the achievements of science and technology as per the CPSU Central Committee-approved work of the ZIL [Plant imeni Lenin]. Along with this, we plan to develop comprehensive special-purpose programs designed to increase the effectiveness and quality of the repair and servicing of railroad cars, to insure the safety of their movement, to improve the conditions and protection of labor, and to resolve a number of social problems. We will also implement a number of measures for further development of invention-rationalization and patent-licensing work in the railroad car enterprises; also, measures for generalizing and disseminating the work experience of the advanced subdivisions in the field of invention and rationalization, for development of creative activity in the railroad car enterprises, for the conduct of competition, etc. All this will enable us to expedite the development and introduction of highly effective inventions in the practical repair work.

One of the most important reserves for increasing the productivity and quality of the labor is universal introduction of the work experience of the advanced collectives and innovators of the railroad operation. Slated for further dissemination is senior car inspector M. P. Batin's method of detecting malfunctions in the skid units, packing inspector P. G. Yukhnevich's experience in detecting damaged automatic coupling units, and the efforts of other outstanding workers. A great effect can be obtained from widespread application of the experience of the PPV [passenger car] collective of station Dubrovka on the South Ural Railroad, which worked out and introduced a comprehensive system of technical servicing of cars employing an effective technology for the repair work; the experience of the car workers of the PTO [technical services point] of Georgiu-Dezh on the Southeast Railroad in respect to mechanization and improvement of the current maintenance of cars: the experience of the collectives of the car depots of Krasnoarmeysk, Lyublino, Uzlovaya, and Bobrik-Donskoy with respect fo full mechanization of the repair of cars, etc.

Something which must obtain ever greater dissemination on the railroads is the CPSU Central Committee-approved work experience of the collectives of the industrial enterprises of Chelyabinskaya Oblast and the South Ural Railroad in respect to reduction of the layover times of the cars for loading operations and in respect to the maintenance of the safety of the rolling stock. For improvement of the passenger transportation great importance attaches to the work of the Chelyabinsk-Glavnyy car sector on the South Ural Railroad in respect fo full preparation of the passenger trains for the run and improvement of the passenger service provisions. A large reserve for increasing the effectiveness of the use of cars is the CPSU Central Committee-approved work of the enterprises of railroad transport and industry of L'vovskaya Oblast.

The fulfillment of the planned assignments for the growth of the labor productivity in the railroad car operation will in many respects be furthered by the broad program of social development adopted by the collectives of the car depots. This program calls for an increase in the effectiveness of the socialist competition, a significant enhancement of the conditions of labor, life and leisure for the workers, improvement of labor safety procedures and further enhancement of the physical welfare of the workers. Greater attention will be focused on the development of a public dining network, the supplying of comfortable special work clothing for the workers, and improvement of the sanitary and personal service facilities. Special importance attaches to the introduction of progressive forms of the organization of labor, improvement of the setting of labor norms, increasing the workers' skills, inculcating a sense of business-like efficiency and responsibility, and strengthening labor and technological discipline.

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7962
CSO: 1829/72

RAILROAD

ROADBED DEFECTS NOTED

Moscow GUDOK in Russian 25 Feb 82 p 2

[Article by M. Gol'dshteyn, professor at the Institute of Rail Transportation Engineers in Dnepropetrovsk: "What Are the Rails Laying On? Problems and Opinions"]

[Text] The design of the track foundation, including ties, ballast and roadbed, upon which the rails are laid, originated a long time ago, and has lasted until our time without any fundamental changes. In the first place, this is explained by the simplicity of installation, the capability of replacing defective elements and the simplicity of work in maintaining and straightening track.

However, under the pressure of increased dynamic train load, the soundness of the roadbed is decreasing and it is becoming ever more difficult to eliminate defects without impeding traffic. Therefore, in all countries recently there has been a search for new and more reliable designs for the sub-rail foundation. Sandy ballast was replaced by crushed stone and the transition to reinforced-concrete ties was implemented. A foundation of blocks, plus slabs to go under the ballast, to distribute the stress over the roadbed. were tested.

As a rule, eliminating some shortcomings is accompanied by an increase in other shortcomings or the appearance of new ones. In our view, the basic reason for failure consisted in forgetting, while improving individual elements of the design, that the disign is a unified structure. Therefore, it is necessary to fundamentally review the entire system, while considering the peculiarities of interaction of individual elements.

The least stable element of the sub-rail foundation is the ballast filling. Experience shows that the ballast gradually loosens up and permanent deformations occur in the ballast due to the effects of vibrations, undulations, weather conditions and pollution. At the same time, crushed stone is displaced from under the ties and the particles on the edge very easily give way.

After all, ballast is not only to absorb the energy of dynamic action, thereby improving the working of the sub-rail foundation (the higher the density of the ballast, the fewer the track straightening operations and the more stable the tracks will be). But on the other hand, energy from vibrations dissipates less well. Replacing the sandy foundation at one time with crushed stone improved the stability of the ballast filling, but the distribution of stress over the basic area of the roadbed became less uniform.

Another weak element of the existing sub-rail foundation is the upper layer of the roadbed. It is practically unprotected from destructive atmospheric effects. That is why rather considerable track deformations (the so-called swellings) occur in a period of freezing and during the spring thaw. Research on the All-Union Scientific Research Institute for Rail Transport has shown that an old roadbed, built without considering contemporary operational conditions, does not usually allow a further increase in train loads and speeds.

Based on everything that has been said, one can draw the conclusion that a better design for the sub-rail foundation is needed. And it is preferable that the design be usable on the existing roadbed. The proposal to switch to a solid foundation of slabs or blocks does not solve the problem, since changing climatic conditions would influence the condition of the ground if such a switch were made.

What should the contemporary sub-rail foundation be? It should eliminate straightening operations and transmit stress to sufficiently deep layers of the roadbed which are not subject to deformations and atmospheric influences. It should reduce maintenance operations to a minimum and also improve the interaction between the tracks and the rolling stock. The design, proposed by us, of a foundation of posts and beams satisfies all these conditions.

Imagine that along the tracks at a certain distance from each other, posts were driven, forming two rows lengthwise. Longitudinal beams, to which the rails are attached, would be installed on the posts. Special crosslinks assure the constant interval between the posts and the beams. The necessary resilence of the tracks could be assured by changing the height of the posts (depending on the characteristics of the ground) and selecting the interval between them. When this is done, the upper layers of the ground protect the deeper part from the vagaries of the weather.

The higher initial cost of this design will prove in the end to be considerably more economical in operation, since maintenance expenses are practically eliminated. The tracks will not be affected by settling, they will be much more reliable and their interaction with rolling stock will be improved. And finally, such a design guarantees the switch to heavier axle loads and increased speed.

Of course, many problems are still not solved, since work on this design for the sub-rail foundation has only begun. Preliminary research and observations of prototypes and test rail sections in operational conditions must be conducted. In the meantime, all efforts must be exerted to speed up theoretical and practical development work. This will allow us to produce a reliable and stable design for the sub-rail foundation.

9887
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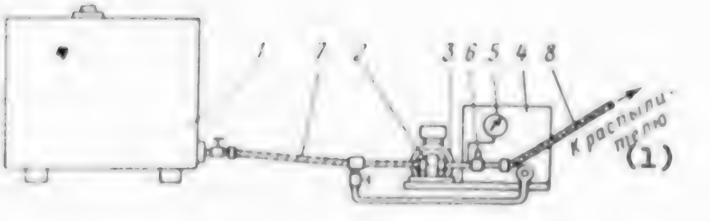
RAILROAD

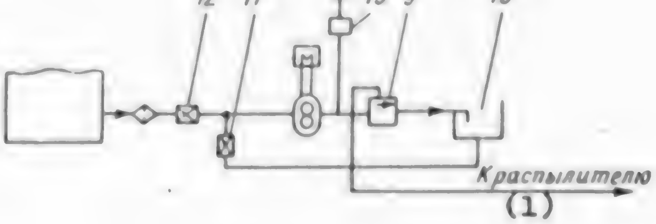
DEVICE TO COAT COAL CARS WITH EMULSION DETAILED

Moscow UGOL' in Russian No 3, Mar 82 p 32

[Text] Until now coal has been shipped to consumers without preliminary preparation of the railway cars' interior surfaces with substances which prevent it from sticking. During the winter, wet coal has been frozen on the cars' sides and floor and has remained in the car even after unloading.

Workers of the "Baydayevskaya" Mine of the "Yuzhkuzbassugol'" Production Association have proposed an apparatus for coating the cars' interior surfaces with an oil emulsion. The unit can be used for wetting the surface of the coal already loaded into cars and preventing it from blowing out in transit. It consists of a reservoir (1) for storing the oil or emulsion, a pump (2), a filter (3), and an oil holding tank [maslostantsiya] (4). For regulating the oil pressure there is a gage (5) with a cutoff valve, and for preventing ruptures in the high-pressure hoses, a safety valve (6). All couplings are connected with each other by a piping system (7). A sprayer is connected to the end of the high-pressure hose (8).





Key: 1. To the sprayer

The apparatus works as follows. Oil from the reservoir is drawn to the pump. After it is cleaned in the filter, the oil is drawn through the safety valve (9) into the hose with the sprayer which wets the surface of the coal (or the side of the car). If the high-pressure hose or the sprayer is clogged, the oil is released into a container (10). When the container is filled the oil is pumped out; for this, valve 11 must be opened and valve 12 closed. Safety valve 13 shuts off the main to the gage in case it goes out of order. The apparatus uses the G-11/23 pump, which delivers 35 liters per minute at a pressure of 1.5 megapascals.

/The annual economic gain amounts to 5,300 rubles./ [in boldface]

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CSO: 1829/187

RAILROAD

EQUIPMENT NEEDED TO EXPEDITE GONDOLA CAR UNLOADING

Moscow GUDOK in Russian 19 Feb 82 p 2

[Text] Rovno--Improved tracks have been built at many stations of the Rovno branch of the L'vov Railroad. Because of this, the unloading of gondola cars is being carried out rapidly. At Dubno, Rovno, Gnidava and other stations, they are being released in a few minutes. At the same time, it is not required to clean what remains out of the cars. But the full gain from the use of rolling stock still has not been achieved.

While minutes are spent in unloading, hours are spent closing the trapdoors on the gondola cars. The problem is that this process has not been mechanized, and they must resort to using crowbars and sledgehammers. In order to expedite the preparation of a group of cars in Rovno, supervisors of the mechanized section of loading and unloading operations are sometimes forced to remove loaders from everywhere.

Improved tracks are now being built at the stations of Lyuboml', Zdolbunov, Dombrovitsa, Vladimir-Volynskiy, Rozhishche and Turiysk. More than 100 cars can be unloaded at them simultaneously. But construction of mechanized equipment for closing the trapdoors has been provided for at only one station, Lyuboml'. It has not been provided for at the rest of them, either by plans or estimates.

It has been proven in practice that improved tracks contribute to accelerated unloading. They will be built everywhere. At the same time, the problem of closing the trapdoors also should be resolved. The TsNII MPS [Central Scientific Research Institute of the Ministry of Railways] has developed a mechanized procedure for this which provides for installation of gantry cranes with the appropriate mounted equipment on improved tracks. However, such cranes are difficult to obtain, and their installation and operation require significant expenditure of funds and materials.

Perhaps the appropriate main administrations will be more attentive to the problem of trapdoors, and innovators locally will become more widely involved in resolving this urgent matter.

[illegible]
CSO: 1829/187

RAILROAD

BRIEFS

BAYKAL-AMUR LINE TUNNEL--Severomuysk, Buryatskaya ASSR, 23 Mar--Tunnel workers of the 11th detachment, who are constructing the largest railway tunnel on the Baykal-Amur Trunk Line from the eastern entrance, 15 kilometers long under the Severomuysk Range, have fulfilled the plan for the first quarter ahead of schedule. The miners who are breaking through from a vertical shaft and the western entrance are also working rapidly. In all, no less than 2,600 meters of the basic tunnel and 2,400 meters of the transport and drainage drift will be cut through under the Severomuysk Range this year. [Excerpts] [Moscow PRAVDA in Russian 24 Mar 82 p 2] 8936

HEAVY FREIGHT LOADS--Bratsk--At the initiative of Moscow workers, engineers of the Vikhorevka Locomotive Roundhouse were the first on the mainlines of Eastern Siberia to begin driving heavily loaded rolling stock. Last year they hauled more than a million tons of freight above the plan. For their high achievements in labor, the collective was awarded the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU, and the Komsomol Central Committee. The Siberian workers are not slowing their pace in the second year of the five-year plan, either. More than 100,000 tons of national economic freight above the plan have been delivered. At the same time, 120,000 kilowatt-hours of electric power have been saved. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 5 Mar 82 p 1] 8936

NEW DIESEL ENGINES--Volkhov--The first 35 new domestic "2M-62" diesel engines have arrived at the Volkhovstroy Locomotive Roundhouse of the Oktyabr' Railroad from the Voroshilovgrad plant. The existing stock of traction engines operating on liquid fuel is being entirely replaced here. The new 4,000-horsepower machines are capable of pulling heavy freight trains at 100 kilometers per hour. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 15 Jan 82 p 2] 8936

AUTOMATED CONTROL SYSTEM--Tynda, 13 Mar--The first section of the automated control system for the Baykal-Amur Trunk Line has been put into operation here. The latest electronic computers, telegraph equipment, and information display units have become the railway workers' assistants. They are making it possible to effectively monitor construction of projects and the work of road sections. Dispatchers now always have an analysis at hand of the cars' turnaround and details on their layovers and other data. [Text] [Moscow PRAVDA in Russian 14 Mar 82 p 1] 8936

NEW CABLE-LAYER--Komsomol'sk-na-Amure--The permafrost will not be an obstacle for the new cable-layer which has been put into production at the construction equipment repair plant for the Baykal-Amur Trunk Line in Komsomol'sk-na-Amure. The first batch of machinery units has been sent to Tynda and Urgal. One driver performs all operations from the tractor cab. Cable is laid at the rate of 5 kilometers per shift. At the request of the trunk line's builders, the collective of the young enterprise also has organized the output of hoists for use on rails, compact plastering stations [shtukaturnyye stantsii] and small-scale mechanization facilities. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Feb 82 p 1] 8936

OUTSIZED FREIGHT CARRIERS--Stakhanov, Voroshilovgradskaya Oblast--The railway car manufacturing plant in Stakhanov has put into production new railway carriers which can carry outsized freight that is beyond the capacity of ordinary flatcars. The carrier, which is over 30 meters long, has a freight capacity of 240 tons. But special conditions are not required for its use: construction with two couplings enables it to negotiate curves in the track. Eight pairs of axles distribute the pressure of the load equally on the rails. Introduction of a large shop gave the Stakhanov car builders the opportunity to produce qualitatively new railway equipment. Several types of special railway machinery units already have come off its production lines. A so-called pit carrier [kolodtsevoy transporter] has been put into production. Its platform is significantly lower than the chassis, which enables it to carry freight which is outsized in height. Transport workers also have received a 62-ton specialized flatcar to carry powerful transformers. This year the enterprise will manufacture nearly 100 carriers of various types. Their use will speed up the delivery of outsized equipment significantly. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Feb 82 p 1] 8936

TRUNK LINE ECOLOGY--Scientists of the Institute of Geography of Siberia and the Far East have returned from an expedition to the Chita section of the Baykal-Amur Trunk Line. They are resolving a difficult problem: how to protect nature in the trunk line region, and the trunk line itself, from the uncertainties of nature. The trunk line passes through the Transbaykal north, and is having more and more of an effect on the region's ecology. For the bed of the railroad and the road near the line here, 47 million cubic meters of earth will be laid down. The "Lengiprotrans" and "Sibgiprotrans" institutes have been searching for gravel pits for these needs. The expedition's purpose also was to prepare a scientifically sound forecast of ecological measures which must be carried out on the trunk line. [Text] [Moscow KRASNAYA ZVEZDA in Russian 7 Mar 82 p 1] 8936

NOVYY URENGOY LINE--Yamalo-Nenetskiy NO--Exactly half the distance from the Tikhaya station to the city of Novyy Urengoy has been reached by builders of the railway trunk line. The brigade of track assemblers headed by Hero of Socialist Labor V. Nolozin has given its word: trains will start for the center of gas deposits on the new railway by the 112th anniversary of V. I. Lenin's birth. [Excerpt] [Moscow IZVESTIYA in Russian 19 Feb 82 p 1] 8936

NEW FREIGHT STATIONS--The new 80-kilometer Ledmozero to Kostomuksha-Tovarnaya rail line has been accepted for permanent operation on the Oktyabr' Railroad. Individual stations have been opened on it to carry out commercial operations: the Kimasozero siding (02871) and Kostomuksha-Tovarnaya (02870). [Text] [Moscow GUDOK in Russian 25 Mar 82 p 2] 8936

TRANSBAYKAL RAILROAD ELECTRIFICATION--Electrification of a 300-kilometer section of the Transbaykal Railroad has begun. Construction workers must erect over 14,000 poles and install wire from the Karymskaya station to Chernyshevsk. Electrification will make it possible to increase the capacity of the trunk line and the speed of the trains. [Text] [Minsk SEL'SKAYA GAZETA in Russian 8 Mar 82 p 1] 8936

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TASS CORRESPONDENT TRAVELS NAVIGABLE SEGMENT OF KARAKUMY CANAL

Frunze SOVETSKAYA KIRGIZIYA in Russian 24 Mar 82 p 2

[Article by Sh. Asuyev, Golovnoye-Zakhmet, Karakumy Canal imeni V. I. Lenin: "Across the Desert by Ship"]

[Text] We are sailing across the desert. Not long ago such a statement would have sounded like a sentence from a science fiction novel. But in our day it is a reality, an ordinary thing on the Karakumy Canal.

The diesel ship Makhtunkli, which took your TASS correspondent on board, is no ocean liner, of course, but it is a fairly large ship and a real "worker." It is laboring hard, towing a barge carrying pipe for the gas extraction workers who are opening up new fields in inaccessible parts of the Karakumy. We began our trip from the town of Golovnoye on the Amudar'ya. This was the point at which, 27 years ago, the world's largest manmade water artery was begun. Today the Karakumy Canal stretches almost 1,100 kilometers, and continues its advance toward the Caspian.

On our right and left are green oases and emerald spring fields outlined by the light blue booms of sprinkling machines. The canal has more than doubled the irrigated cropland of Turkmenistan and brought water to millions of hectares of desert pasture. Half of the cotton produced in the republic is raised in this zone. More and more land is being put in orchards, gardens, and vineyards.

But the Karakumy Canal has done more than simply breathe life into agriculture. New industrial plants and factories and power plants have been built along it, and oil and gas fields have appeared.

We are passing the town of Nichka, one of many that has grown up in a place that was only dunes before. About two-thirds of the population of Turkmenistan lives in the canal zone; more than 20 agricultural communities have been built and provide their inhabitants with all conditions necessary for beneficial labor and recreation.

On the starboard side we pass a dredge ringed by frothy turbulence. This is also a distinctive feature of the Karakumy "river": it is under construction and in operation at the same time. One subdivision of Glavkarakumstroy [possibly Main Administration for Construction of the Karakumy Canal] is carrying the canal route further west, while another widens and deepens the channel throughout its length, removes sediment, and builds up the capacities of the manmade seas.

Generations of top specialists have matured on this unique hydroengineering project. One of them is excavator operator Tachmurad Byshimov. He has been on the canal since the first days of construction. He came here as a young man infatuated with a dream of bringing water to his native village. He did it, and then moved on further, covering the entire route of the canal with the lead detachment of canal builders. He became a Hero of Socialist Labor.

In addition to worker specializations the canal required many other, seemingly unexpected professions for the desert such as pilot, diver, and ichthyologist. And certainly the profession of our captain, the experienced river man Ivan Shishenin, who takes ships through the desert, is equally exotic.

"Sometimes you just forget that you are in the Karakumy," he says. "Navigating conditions on the canal are excellent. Traffic is fairly lively, but ships do not interfere with one another. The channel is more than 100 meters wide and up to five meters deep. Navigating signs have been installed along the entire route. At the present time we can sail to the 450th kilometer of the route. But the waterway is now being extended. We are waiting impatiently for the day when we will take diesel ships from the Amudar'ya to Ashkhabad, which will be added to the number of our port cities."

And here are some more rightful participants in traffic on the river: canoes are racing toward us, paddles flashing in the sun. No one is surprised any more that many athletes from Turkmenistan are among the prominent Soviet oarsmen, including national and world champions, even though for centuries a drop of water here was the equivalent of gold.

At Zakhmet, the last point of the navigable segment, we come down the ramp from the ship, but the canal and its waves roll on. Its path takes it to Kazandzhik, a small city in the arid Caspian steppe. Bulldozers are working there now, at the 1,096th kilometer mark. Beyond Kazandzhik the channel will divide in two. One branch will turn sharply to the south and flow to the Turkmen subtropics. The other, dressed in steel pipe, will take water to the industrial centers of Nebit-Dag, Cheleken, and Krasnovodsk.

The canal is penetrating ever deeper into the Karakumy desert. Like a skillful painter, on its palette it mixes the yellow of the sand with the blue of water and produces green, the color of life.

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SHIPPING ON THE KARAKUM CANAL

Moscow Domestic Service in Russian 0805 GMT 5 Sep 81

[Summary] Correspondent reports from the control room of the Central Asian shipping line on the first navigation season along the Karakum canal. Regular goods traffic on the canal began this year. The line aims to carry about 100,000 tons of cargo this year for the builders of the canal. At present there are six dry-cargo barges and four motor vessels operating on the canal. The first voyages were difficult because the navigation channel was unfamiliar and there are many hydro-technical structures. As yet there are no large ports or jetties, neither is the amount of cargo very great at the moment.

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OCEAN AND RIVER

BRIEFS

SOVIET NUCLEAR-POWERED CONTAINER CARRIER--Soviet shipbuilders have started the construction of the world's first nuclear-powered lighter and container carrier. Its main steam turbine, which activates the propeller, has a capacity of 40,000 hp. The ship will carry 73 lighters. They will be the floating containers weighing almost 500 tons each. The ship has a length of 260 meters, width 32.2 meters and a water displacement of 61,200 tons. Engineers have designed a unique protection for a controllable pitch screw, which makes the ship highly maneuverable. They have thoroughly thought out the safety system for the engine compartment. A special crane will take a lighter aboard or will set it afloat in 20 minutes' time. The new lighter-container carrier will be run in the regions which lack port facilities. At the stopovers the carrier will put the lighters afloat and will be off again on its way. The crew members will be accommodated in single-berth cabins. The ship will have an indoor swimming pool, a gym, a sauna, a cinema hall, a saloon, a cozy mess for the officers, and a canteen for the crew. (APN) [Text] [Manila PHILIPPINES DAILY EXPRESS in English 3 Apr 82 p 14]

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